

REMARKS

Entry of Amendment

As Applicants are filing a RCE herewith, this amendment and the accompanying IDS should be entered and considered by the Examiner at this time.

Applicants will now address each of the Examiner's rejections in the order in which they appear in the Final Rejection.

Claim Rejections - 35 USC §103

Claims 1-4, 6-10, 12-18 and 52-54

In the Final Rejection and Advisory Action, the Examiner continues to reject Claims 1-4, 6-10, 12-18 and 52-54 under 35 USC §103(a) as being unpatentable over Masuda et al. (US 6,107,983) in view of Aoki et al. (US 4,644,338). This rejection is respectfully traversed.

While Applicants traverse this rejection, in order to advance the prosecution of this application, Applicants have canceled Claims 1-4 and 6, rendering the rejection of these claims moot. Applicants are also amending Claims 13-14 and 16 herewith.

Further, independent Claim 7 specifically recites that in the claimed device, all the semiconductor elements are n-channel type semiconductor elements. As Applicants explain in depth in the specification, Applicants have discovered that it is particularly advantageous and effective to have a light-emitting device formed of all the semiconductor elements being n-channel type semiconductor elements. The Examiner's attention is particularly directed to page 4, ln. 10 - page 6, ln. 1; page 6, lns. 13-18; page 10, lns. 13-17; and page 21, lns. 1-10 of the specification of the claimed application as examples of the advantages of the present invention. As previously

explained, Applicants are unaware of any prior art reference that show a light-emitting device with the claimed elements in which all the semiconductor elements are n-channel type semiconductor elements.

It is respectfully submitted that none of the cited references disclose or suggest that all the semiconductor elements are n-channel type semiconductor elements. As Applicants previously pointed out, there has been no showing by the Examiner of this claimed feature. Even the Advisory Action fails to address this point. Hence, there is no *prima facie* case of obviousness, plus any *prima facie* case has clearly been rebutted, and accordingly, this rejection should be withdrawn.

Independent Claims 7 and 13 also recite that each of the plurality of pixels comprises a light-emitting element. In order to advance the prosecution of this application, Applicants will again explain how the claimed features are not shown in the cited references.

More specifically, in the Final Rejection, the Examiner *admits* that Masuda does not disclose that all the semiconductor elements are n-channel type semiconductor elements.

The Examiner, however, cites Aoki, and states in the Response to Arguments that “Aoki teaches a liquid crystal display system as shown in Fig. 5 in which the peripheral circuits for driving the semiconductor driver elements are formed on the surface of the substrate on which the thin-film transistors 6R, 6G, 6B for driving the liquid crystal are fabricated. More specifically, Aoki teaches the latch circuit 26 serving as the column driver and the shift register 29 are fabricated as integrated circuits on the substrate 12, and the gate line selector and driver circuit 32 is fabricated as an integrated circuit on the substrate. Aoki shows that the peripheral circuits 26, 29, 32 can be formed simultaneously with the thin-film transistors 6R, 6G, 6B on the substrate 12 without having to increase the number of fabrication steps required (col. 7, lines 29-51).”

As mentioned above, independent Claim 7 recites that all semiconductor elements in the display portion and the driver circuit are n-channel type semiconductor elements, and each of the plurality of pixels comprises a light-emitting element. For at least the reasons discussed below, Applicants respectfully disagree and traverse the assertions in the Final Rejection.

In general, at least three types of the semiconductor elements can be used for forming the display portion and driver circuit, i.e. PMOS (p-channel type), NMOS (n-channel type), and CMOS (n-channel and p-channel type) semiconductor elements. Therefore, even if the thin-film transistors in the peripheral circuits are formed simultaneously with the thin-film transistors in the display portion as allegedly shown in Aoki, polarities of the thin-film transistors in the peripheral circuits and the display portion could be different from each other. Aoki does not disclose that they are the same. Hence, this alleged teaching in Aoki does not disclose or suggest that only n-channel type semiconductor elements are used in the display portion, and also that only n-channel type semiconductor elements are used in the driver circuit. In addition, there is no reason, discussion, or explanation in the Final Rejection as why only n-channel type semiconductor elements could or would be selected in both the display portion and the driver circuit by combining Aoki and Masuda.

Further, the present invention as claimed in Claim 7 has advantages by forming only n-channel type semiconductor elements in both the display portion and the driver circuit. According to page 4, line 2 to page 6, line 1 of the specification of the present application, Fig. 19B shows an example of use of a current control TFT as the n-channel TFT in the structure shown in Fig. 18B. In this case, a current can be supplied to the EL element 1903 with stability. From the above-described facts, the inventors of the present invention have discovered that in a case where a pixel is formed as the structure in which the cathode of the EL element is connected to the drain of the current control TFT, it is desirable to use an n-channel TFT as the current control TFT. The inventors then

discovered that it would be highly advantageous if all semiconductor elements (typically, thin-film transistors) are formed as n-channel semiconductor elements. The present invention is also characterized in that the driver circuits are formed only of n-channel semiconductor elements. That is, according to the present invention, only n-channel semiconductor elements are combined to form a driver circuit. In contrast, ordinary driver circuits are designed on the basis of a complementary metal-oxide semiconductor (CMOS) circuit in which an n-channel semiconductor element and a p-channel semiconductor element are complementarily combined.

In contrast to the above, the Examiner provides no reason why only n-channel type semiconductor elements could be or would be selected in both the display portion and the driver circuit by combining Aoki and Masuda.

It is further noted that independent Claims 7 and 13 recite a “light emitting element.” As explained on page 1, lines 8-27 of the specification, a “light emitting element” and a “liquid crystal element” are different types of element. A “light emitting element” is an element constituted of a pair of electrodes and a thin film of a light-emitting material interposed between the pair of electrodes. In contrast, a “liquid crystal element” is an element in which a liquid crystal material is interposed between electrodes. The claimed invention is directed to a light emitting device. Both Aoki and Masuda, however, are directed to a liquid crystal display device. The Examiner states in the Advisory Action that fabrication is the same for LCD and light emitting devices. However, Claims 7 and 13 are directed to a light-emitting device, *not* a method of fabrication. Therefore, the claimed structure cannot be obtained even if it were proper to combine Aoki and Masuda.

In order to advance the prosecution of this application, Claims 13, 14 and 16 have been amended and clearly distinguish the claimed invention over the cited references.

Therefore, the independent claims are not disclosed or suggested by the cited references, the combination of references is improper and there has been no showing of all the claimed elements. Further, even if the references are properly combinable (which Applicants do not admit), the combination still fails to disclose or suggest the claimed invention. Accordingly, the claims are patentable over these references, and it is respectfully requested that this rejection be withdrawn.

In addition, with respect to Claims 8 and 15, the Examiner states that Aoki teaches substrates which may be formed of high polymers such as polyimide or fluorine plastics. These claims, however, recite that the substrate is a plastic substrate covered with a protective film. Neither Aoki nor Masuda disclose or suggest that the substrate is a plastic substrate covered with a protective film, and this point has not been addressed by the Examiner.

Further, independent Claim 7 also recites that the display portion comprises a switching element and a current control element. In the Response to Arguments, the Examiner states that “Masuda teaches as shown in Fig. 7 a plurality of switches 343a.” Claim 7, however, recites the display portion comprising a switching element. According to col. 9, lines 8-14, Fig. 7 of Masuda is directed to a video signal line drive circuit 301a. Hence, switches 343a are in the video signal line drive circuit, not the display portion. Therefore, Masuda does not disclose or suggest the display portion comprising a switching element.

Hence, the Examiner has not still not produced a *prima facie* case of obviousness as there has been no showing of a reference or teaching that shows the above claimed features. Even if combined, the references fail to disclose the claimed features. Further, the combination of references is improper. Therefore, it is respectfully submitted that Claims 7-10, 12-18 and 52-54 are not disclosed or suggested by the cited references, and these claims are patentable over these references. Accordingly, it is respectfully requested that this rejection be withdrawn.

Claims 19-21, 23-25, 27-29, 31-33, 35-37, 40-41, 43-51 and 55-69

The Examiner also continues to reject Claims 19-21, 23-25, 27-29, 31-33, 35-37, 40-41, 43-51 and 55-69 under 35 USC §103 (a) as being unpatentable over Matsuda in view of Aoki and Tsutsumi et al. (US 6,713,748). This rejection is also respectfully traversed.

For at least the reasons discussed above, these claims are also patentable over the cited references, and the rejection of these claims is improper.

Further, in order to advance the prosecution of this application, Applicants have amended independent Claims 24 and 32 herewith.

In addition, with respect to independent Claims 19 and 24, the Examiner states that Tsutsumi discloses as shown in Fig. 8B a circuit in which the gates are connected to the drains of the respective TFTs Tr1 to Trx. Claims 19 and 24 recite a driver circuit comprising a buffer circuit, and the buffer circuit comprising a first semiconductor element and a second semiconductor element connected in series with said first semiconductor element, and a gate of said second semiconductor element is connected to a drain of said first semiconductor element. However, according to col. 10, lines 56-67, Fig. 8B in Tsutsumi is related to Fig. 1, 2 and 6 which describe the display portion. Therefore, the semiconductor disclosed in Tsutsumi cannot be applied, and does not disclose or suggest, the semiconductor element recited in Claims 19 and 24. This point is also not addressed in the Advisory Action. Therefore, this rejection should be withdrawn.

With respect to Claims 28, 32, 36 and 41, these claims recite that the driver circuit comprises a shift register containing a plurality of flip-flop circuits comprising enhancement-type n-channel thin film transistors and depletion-type n-channel thin film transistors. The Examiner, however, does not mention these features at all in the Final Rejection or Advisory Action. Applicants respectfully

submit that these features are not disclosed by cited references. Accordingly, no *prima facie* case has been made, and this rejection should be withdrawn.

With respect to Claims 61 and 63-69, these claims recite that each of the plurality of pixels comprises a switching element, a current control element for controlling an amount of current to the light-emitting element, and a capacitor. The Examiner states that Masuda teaches as shown in Fig. 7 a plurality of switches 343a. However, as explained above, according to col. 9, lines 8-14, and Fig. 7, Masuda teaches that the switches 343a are in the video signal line drive circuit 301a. Therefore, Masuda does not disclose or suggest the display portion comprising a switching element. Accordingly, this rejection should be withdrawn.

Therefore, it is respectfully submitted that Claims 19-21, 23-25, 27-29, 31-33, 35-37, 40-41, 43-51 and 55-69 are not disclosed or suggested by the cited references, and these claims are patentable over the references. Accordingly, it is respectfully requested that this rejection be withdrawn.

Information Disclosure Statement

Applicants are submitting an information disclosure statement (IDS) herewith. As an RCE is being filed herewith, it is respectfully requested that this IDS be entered and considered prior to the issuance of any further action on this application.

Conclusion

It is respectfully submitted that the present application is in a condition for allowance and should be allowed.

If any fee should be due for this amendment, IDS or RCE, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

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Respectfully submitted,

Mark J. Murphy/
Mark J. Murphy
Registration No. 34,225

COOK, ALEX, McFARRON, MANZO,
CUMMINGS & MEHLER, Ltd.
200 West Adams Street, Suite 2850
Chicago, Illinois 60606
(312) 236-8500

Customer No. 26568